

Notice of Allowability**Application No.**

10/055,174

Examiner

Jennifer E. Graser

Applicant(s)

BRIGGS ET AL.

Art Unit

1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included
ewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS
NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative
of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

☒ This communication is responsive to 11/8/04.

☒ The allowed claim(s) is/are 36-41,66,81-88,91,92 and 95-101.

☒ The drawings filed on 25 January 2002 are accepted by the Examiner.

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the
International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements
stated below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF
INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of
each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the
attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

☐ Notice of References Cited (PTO-892)

☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____

☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.

7. ☒ Examiner's Amendment/Comment

8. ☐ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Sarah Kagan, Reg. No. 32,141, on November 23, 2004.

Claims 36-41, 66, 81-88, 91, 92, and 95-101 are allowed.

The application has been amended as follows:

Please substitute/amend claims 81, 91 and 95 with the following claims:

81. (presently amended) A method of inducing immunity to pneumonic pasteurellosis in ruminants comprising, administering a vaccine formulation which comprises:

- (a) a killed *P.haemolytica* bacterium which contains no non-*P.haemolytica* DNA and which expressed a deletion mutant leukotoxin when it was alive; and
- (b) a *P.haemolytica* deletion mutant leukotoxin in the form of a purified protein or in a preparation selected from the group consisting of a bacterial lysate, a bacterial extract, and a culture supernatant;

wherein the deletion leukotoxin molecules of (a) and (b) have a molecular weight of about 66 kDa, lack amino acid residues 34 to 378 of the wild-type leukotoxin molecule, and induce antibodies which specifically bind to and neutralize biologically active leukotoxin.

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91. (presently amended) A feed for ruminants which comprises:

- (a) a killed *P.haemolytica* bacterium which contains no non-*P.haemolytica* DNA and which expressed a deletion mutant leukotoxin when it was alive; and
- (b) a *P.haemolytica* deletion mutant leukotoxin in the form of a purified protein or in a preparation selected from the group consisting of a bacterial lysate, a bacterial extract, and a culture supernatant;

wherein the deletion leukotoxin molecules of (a) and (b) have a molecular weight of about 66 kDa, lack amino acid residues 34 to 378 of the wild-type leukotoxin molecule, and induce antibodies which specifically bind to and neutralize biologically active leukotoxin.

95. (presently amended) A vaccine for reducing morbidity in ruminants, comprising:

- (a) a killed *P.haemolytica* bacterium which contains no non-*P.haemolytica* DNA and which expressed a deletion mutant leukotoxin when it was alive; and
- (b) a *P.haemolytica* deletion mutant leukotoxin in the form of a purified protein or in a preparation selected from the group consisting of a bacterial lysate, a bacterial extract, and a culture supernatant;

wherein the deletion leukotoxin molecules of (a) and (b) have a molecular weight of about 66 kDa, lack amino acid residues 34 to 378 of the wild-type leukotoxin molecule, and induce antibodies which specifically bind to and neutralize biologically active leukotoxin.

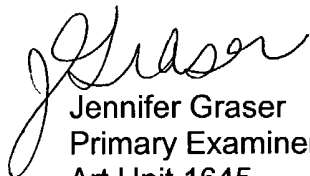
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3. Correspondence regarding this application should be directed to Group Art Unit 1645. Papers related to this application may be submitted to Group 1600 by facsimile transmission. Papers should be faxed to Group 1600 via the PTO Fax Center located in Remsen. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 1645 Fax number is (703) 872-9306 which is able to receive transmissions 24 hours/day, 7 days/week.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer E. Graser whose telephone number is (571) 272-0858. The examiner can normally be reached on Monday-Friday from 7:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith, can be reached on (571) 272-0864.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-0500.


Jennifer Graser
Primary Examiner
Art Unit 1645
11/23/04